

## **THE CLAIMS**

For the convenience of the Examiner, all pending claims of the present Application are shown below whether or not an amendment has been made.

**1. (Currently Amended)** A method of identifying problems in applications, comprising:

monitoring at a kernel level system resource usage of one or more running ~~processes belonging to one or more user-applications~~ without modifying run-time environments of the one or more ~~user-applications~~; and

from the monitored system usage, determining whether a system usage pattern of a first application satisfies a predetermined criteria associated with one or more problems; and

if the system usage pattern of the first application satisfies the predetermined criteria, identifying the first application to a user. ~~a first user application whose system usage pattern satisfies a predetermined criteria associated with one or more problems.~~

**2. (Currently Amended)** The method of claim 1, wherein the system resource usage comprises a number of the one or more processes that each of the one or more ~~user~~ applications have spawned and the predetermined criteria comprises a predetermined limit on the number of processes that each of the one or more ~~user-applications~~ may spawn.

**3. (Currently Amended)** The method of claim 1, wherein:  
monitoring at a kernel level system resource usage of one or more running ~~applications~~ ~~processes~~ comprises monitoring a parent-child relationship between ~~each of the one or more~~ running processes and each of the one or more ~~user-applications~~; and  
~~identifying to a user a first user application whose~~ determining whether a system usage pattern of a first application satisfies a predetermined criteria associated with one or more problems comprises ~~identifying a~~ determining whether the first user-application that has orphaned one of the one or more running processes.

**4. (Currently Amended)** The method of claim 1, wherein the system resource usage comprises memory usage of the one or more running applications. ~~processes.~~

5. (Currently Amended) The method of claim 1, wherein:  
the one or more ~~user~~-applications comprise one or more user applications initiated at the user level; and  
monitoring at a kernel level system resource usage of one or more running applications comprises monitoring at a kernel level system resource usage of one or more running processes belonging to one or more user applications wherein the one or more running processes comprise one or more processes initiated at the kernel level by the one or more user applications.

6. (Currently Amended) The method of claim 1 wherein the system resource usage of the one or more running ~~processes~~ applications is monitored over a plurality of consecutive discrete time periods.

7. (Currently Amended) The method of claim 6, wherein:  
the system resource usage comprises an amount of memory usage for each of the one or more ~~processes~~ applications; and  
the predetermined criteria is a limit on a number of memory increases allowed during the plurality of time periods.

8. (Currently Amended) The method of claim 6, wherein:  
the system resource usage comprises an amount of memory usage for each of the one or more ~~processes~~ applications; and  
the predetermined criteria is a generally continuous increase in the amount of memory usage during the plurality of time periods.

9. (Currently Amended) The method of claim 6, wherein:  
the system resource usage comprises a number of ~~the one or more~~ processes that each of the one or more ~~user~~-applications have spawned; and  
the predetermined criteria is a generally continuous increase in the number of child processes spawned during the plurality of time periods.

**10. (Currently Amended)** The method of claim 1, wherein identifying the first application to a user a ~~first user application whose system usage pattern satisfies a predetermined criteria associated with one or more problems~~ comprises saving an identifier of the first application in a reference file, and further comprising saving identifiers of any other of the one or more ~~user-applications whose system usage pattern satisfies a predetermined criteria associated with one or more problems~~ in the reference file.

**11. (Currently Amended)** The method of claim 10, wherein a computer automatically:

monitors the kernel level system resource usage of one or more running applications;  
~~processes~~

determines whether a system usage pattern of a first application satisfies a predetermined criteria associated with one or more problems; and

identifies the first ~~user-application~~.

**12. (Currently Amended)** A method of identifying memory problems in applications, comprising:

monitoring at a kernel level memory usage of one or more running ~~processes belonging to a user~~ applications without modifying run-time environment of the user applications; and

producing an output comprising at least the memory usage; and

from the monitored memory usage, determining whether a memory usage pattern of a first application satisfies a predetermined criteria associated with one or more problems; and

if the memory usage pattern of the first application satisfies the predetermined criteria, identifying the first application to a user, ~~a first user application whose memory usage pattern satisfies a predetermined criteria associated with one or more problems.~~

**13. (Previously Presented)** The method of claim 12, wherein:

the memory usage of the one or more running processes is monitored over a plurality of consecutive discrete time periods, and

the predetermined criteria is a limit on a number of memory increases allowed during the plurality of time periods.

14. **(Currently Amended)** A system for method of identifying memory problems in applications, comprising a computer operable to:

monitoring at a kernel level memory usage of one or more running processes belonging to one or more user applications without modifying run-time environments of the one or more user applications;

respectively linking each of the one or more running processes to each of the one or more user applications;

producing produce an output comprising at least the memory usage of one or more user applications; and

from the output, determine whether a memory usage pattern of a first application satisfies a predetermined criteria associated with one or more problems; and

if the memory usage pattern of the first application satisfies the predetermined criteria, identifying a the first user-application by saving an identifier of the first application in a reference file. whose memory usage pattern satisfies a predetermined criteria associated with one or more memory problems.

**15. (Currently Amended)** A method of identifying memory problems in applications, comprising:

monitoring at a kernel level memory usage of one or more running processes ~~belonging to one or more running user-applications~~ without modifying run-time environments of the running ~~user-applications~~; and

from the monitored memory usage, determining whether a memory usage pattern of a first application satisfies a predetermined criteria associated with one or more problems; and

if the memory usage pattern of the first application satisfies the predetermined criteria, identifying a ~~the~~ first running ~~user~~-application ~~without identifying the one or more running applications~~ whose memory usage patterns ~~do not satisfies~~—a ~~satisfy~~ the predetermined criteria associated with ~~the~~ one or more memory problems.

**16. (Original)** The method of claim 15, wherein the monitored memory usage comprises at least a stack memory, data memory, and text memory.

**17. (Currently Amended)** A method of identifying memory problems in applications, comprising:

collecting system resource usage at a kernel level of one or more running processes belonging to one or more ~~user~~—applications without modifying run-time environments of the one or more user running applications; and

from the collected system resource usage, determining whether a system resource usage pattern of a first application satisfies a predetermined criteria associated with one or more problems; and

if the system resource usage pattern of the first application satisfies the predetermined criteria, identifying the first application to a user. a first user application whose system resource usage pattern satisfies a predetermined criteria associated with one or more system resource usage problems.

**18. (Previously Presented)** A system for identifying problems in applications, comprising:

a data collection module operable to retrieve information about a running user applications at a kernel level; and

a data analysis module operable to determine from the retrieved information an abnormal system usage pattern in the information; and

identify from the abnormal system usage pattern, a first user application whose system usage pattern satisfies a predetermined criteria associated with one or more problems.



**19. (Currently Amended)** A program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform method steps of identifying problems in applications, comprising:

monitoring at a kernel level system resource usage of one or more running ~~processes belonging to one or more user applications~~ without modifying run-time environments of the one or more ~~user applications~~; and

from the monitored system usage, determining whether a system resource usage pattern of a first application satisfies a predetermined criteria associated with one or more problems; and

if the system resource usage pattern of the first application satisfies the predetermined criteria, identifying the first application to a user, ~~a first user application whose system usage pattern satisfies a predetermined criteria associated with one or more problems.~~

**20. (Currently Amended)** The program storage device of claim 19, wherein the system resource usage comprises a parent-child relationship between ~~each of the~~ one or more processes and each of the one or more ~~user applications~~; and

~~identifying to a user a first user application whose~~ determining whether a system usage pattern of a first application satisfies a predetermined criteria associated with one or more problems comprises ~~identifying a~~ determining whether the first user application that has orphaned one of the one or more running processes.

**21. (New)** The method of Claim 1, wherein determining whether a system usage pattern of a first application satisfies a predetermined criteria associated with one or more problems comprises:

comparing the monitored system usage for the first application against the predetermined criteria; and

selecting the first application from the one or more running applications if the system usage pattern of the first application satisfies the predetermined criteria.